



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,088	11/14/2003	Ian M. McMackin	P69/MII-29-11-03	9507
25108	7590	11/21/2005	EXAMINER	
MOLECULAR IMPRINTS, INC. KENNETH C. BROOKS PO BOX 81536 AUSTIN, TX 78708-1536			PADGETT, MARIANNE L	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,088

Applicant(s)

MCMACKIN ET AL.

Examiner

Marianne L. Padgett

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/15/5, 4/19/5, 3/24/5, 4/08/4, 2/11/4, 11/14/03
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/15/5, 4/19/5, 3/24/05, 4/08/04, 2/11/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1762

1. Claims 1-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 11 & 21, the preamble is not commensurate in scope with the preamble, as no "total volume" is ever dispensed. It is further unclear exactly what a total volume would consist of, all the liquid in the world, some undefined total, the amount in some unclaimed container or what.

Claims 1, 11 & 21 require that each droplet "has a unit volume", which means that all droplets are the same size or "unit", as there is only one unit volume, however claims 1, 12 & 22 appear to improperly broaden the claimed limitation by claiming some "subset...of droplets is a function of a smallest unit volume...". Alternately, this is confusing how something (a unit volume), which can have only one value, can have a smallest value. The function of a variable may give different values depending on that variable, but the function of a constant would be constant. Claims 2 & 13 appear to be the inherent definition of a unit volume, so do not add anything. Did applicants phrasing claim what they actually intended?

Claims 2, 12-13 & 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. See above.

In claim 4, where & when the gas is present & the spreading occurs is not clear or claimed, and could be anytime before or after reaching the substrate during the existence of the droplets. Claims 9, 15 & 23 also don't clarify when gas is present with respect to process steps, plus are further vague & indefinite as "said predetermined region" has not been designated & can not be clearly determined, I.e. no clear antecedent basis.

In claims 5, 16 & 24, "concurrently with what? Also, do 1st & 2nd directions refer to patterns on the substrate or how compression occurs, i.e. if 1st is pressed against the substrate, does the 2nd perpendicular direction shove over or scrap off droplets? The phrasing is ambiguous.

Claim 7 should use proper Markush group terminology for clarity.

Art Unit: 1762

Use of relative terms that lack clear metes & bounds in the claims, or in a clear definition in the specification or in relevant cited prior art, is vague & indefinite. In claim 7, see "smooth"; & in claims 10, 18 & 26 "complementary".

In claims 8, 17 & 25, "said first dimension" lacks any antecedent basis, as it has never been introduced & can't be the previous "first direction", because that's what it is defining. The meaning of this limitation cannot be determined or effectively searched.

In claim 18, is "a region" the same as "an area" of the independent claim, or how are they related? It is noted that as an area is singular, the spreading of the droplets is already required to be of a contiguous nature. In line 7, "layer to for..." does not make sense, but could be a typographical error intended to be --layer to form...-- . In line 8, "complementary to...patterned region" has no clear meaning, as complementary means favorable or freely given, neither of which provide a meaningful description of layer positioning. If something like --corresponding-- was intended, that would be an undefined relative term, since it would not tell how the patterned region & region/area on the substrate corresponded. Also see claims 10 & 26 for analogous problems.

Claims 19-20 & 27-28 have unclear meaning with respect the substrate and droplets of unspecified material, as there is no necessary way or means for the electromagnetic field (includes light, electric fields, magnetic fields) to affect the unspecified materials. Electromagnetic field of light, electric fields, magnetic fields can variously cause heating, attraction or repulsion depending on materials, such that the intended scope is unclear.

In claim 21, it is unclear if the droplets are ever in contact with each other when spread or not, since lines 12-14 do not positively claim any such contacting. As written claim 21 & dependants would appear to include spreading when no contact occurs, & in such instances the minimizing limitation is irrelevant.

2. The various IDS have been reviewed & made of record. For 8/15/05, item # D18 appears to be a website, which is not a proper reference, so has been crossed out, however the abstracts provided therewith have been reviewed.

3. The drawings are objected to because:

Fig. 7 has unidentified lumps on the surface (30a) and are somewhat unclear due to the poor or rough quality of the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should

Art Unit: 1762

include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended."

If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

Art Unit: 1762

each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-2, 4-6 & 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donges (6,234,379 B1).

Donges teaches depositing individual droplets in a pattern, where they may be singly deposited at a location & the pattern is configured to minimize or eliminate voids & air pockets between the substrate & the flip chip, which is pressed down on it consequently spreading the deposited droplets. Note as illustrated & discussed, this would produce a contiguous layer. Donges doesn't discuss minimizing the travel distance or volume, but context suggest uniform size droplets, and minimizing both void excess deposit so it won't squeeze out, would have suggested to one of ordinary skill the use of a pattern that has relatively uniformly spaced droplets in order to achieve both effects, which would in turn have the effect of minimizing travel distances as claimed, such that to do so would have been obvious.

It is noted that unless a process is done in absolute vacuum, there will always be gas proximate to droplets at all times during the deposition process, & that minimizing voids is equivalent to preventing entrapment of gas.

In Donges, see the abstract; figures; summary; col.4, lines 1-15; col.5, lines 5-16 & 48-61; & claims.

6. Claims 1-18 & 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nebashi et al (6,646,662 B1).

Nebashi et al teach using a template (a patterned body) that delivers coating material in a pattern, where the delivery as illustrated in fig.10 may be by spaced apart drops, with pressure from the pressure chamber of the template, and movement between substrate & template used to form a pattern as

Art Unit: 1762

illustrated in fig.1, which has contiguous deposits & has a correspondence of the patterned template. Nebashi et al doesn't discuss minimizing the travel distance or volume, however the teachings on uniform patterning are suggestive of equal volume deposits & with the illustrated even spacing of droplets, may be considered suggestive of claimed minimizing, such that given these teachings it would have been obvious to one of ordinary skill to arrange the droplet deposition pattern to most efficiently achieve the desired pattern which would have effectively included the claimed minimizing. Note as Nebashi et al may adjust the volume of liquid or drops applied to suffice for patterning purposes as discussed in col.5, this suggest differential droplet sizes, and the difference can always be described by some function of an arbitrary unit volume, such that one will be greater than the other.

In Nebashi et al, see the abstract; fig.1-6 & 9-10; Summary, esp. col.2, lines 12-59; col.5, lines 25-col.7, line 30; & col.9, line 58-col.10, line 43.

7. Claims 19-20 & 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nebashi et al (6,646,662 B1) or Donges (6,234,379 B1) as applied to claim 1-18 & 21-26, as appropriate above, and further in view of Everaerts et al (5,817,376).

Nebashi et al or Donges do not teach use of electromagnetic field in the spreading step of applying the droplets, however Everaerts et al teach that it is advantageous to employ electrostatic assistance to alleviate air entrapment between "coating beads" and the substrate in continuous liquid coating processes, where the electrostatics can be used to move the coating bead, i.e. droplet, with coaters such as gravure, which would have recess patterns are also mentioned. Given primary reference teachings on minimizing void or uniform delivery/patterning of liquid drops, it would have been obvious to one of ordinary skill in the art to employ electrostatics in positioning droplets for advantages as suggested by Everaerts et al, as the alleviation of air entrapment is consistent with desires of either Nebashi et al or Donges & analogous as both employ liquid coating techniques that could be used in a continuous manufacturing environment.

In Everaerts et al, see the abstract; col.1, line 44-col.2, line 19; & col.5, lines 19-55.

8. Claims 1-2, 4-13 & 15-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10-14 of U.S. Patent No. 6,929,762 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because their narrower focus encompassed the broader limitations of the present claims, especially considering the uncertainty of many features in the present claims, as well as previously discussed inherent meanings or using equivalent terminology.

Art Unit: 1762

Note while there are no overlapping inventors, the assignee is the same, hence since the filing date is before that of the present case, the following 103 rejection is also required unless appropriate showings are provided.

9. Claims 1-2, 4-13 & 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubin et al as discussed above in section 8.

10. Claims 1-2, 4-13 & 15-18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 150-156, 165-171, 174-175, 178-179 of copending Application No. 09/908,455. Although the conflicting claims are not identical, they are not patentably distinct from each other because reasons analogous to those of section 8 above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claims 1-2, 4-13 & 15-18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 6, 8-10 & 15-28 of copending Application No. 10/143,092. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are not patentably distinct from each other because reasons analogous to those of section 8 above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 3, 14 & 19-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims as applied above of copending Application No. 10/143,092 or 09/908,455 in view of Nebashi et al (6,646,662 B1) in view of Everaerts et al (5,817,376), as applied above, noting the difference in these use claims is the lack of different size drops & use of electromagnetics for spreading.

This is a provisional obviousness-type double patenting rejection.

Art Unit: 1762

13. Claims 3, 14 & 19-28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10-14 of U.S. Patent No. 6,929,762 in view of Nebashi et al (6,646,662 B1) in view of Everaerts et al (5,817,376), as applied above, noting the difference in these use claims is the lack of different size drops & use of electromagnetics for spreading.

14. Other art of interest includes:

Kamio who as described in the translation (scope of claims, etc) appears to teach techniques within possible meanings of claims as presently worded, such that it is cumulative to the above rejections.

Chou (2002/0177319 A1) that are equivalent to Everaerts et al (5,817,376).

Steiner et al, teaching topographically patterned electrodes, that may employ compositional variations therefore, where voltage applied between electrodes moves a liquid deposit on the substrate to create structure that interfaces with the topographic pattern. The illustrations, e.g. fig.3, show some coating material remaining between raised features, but does not indicate whether or not it's continuous. The example discussed on p.15 uses a microscope slide with ITO coatings thereon mounted on top of the bilayer coated Si wafer substrate, hence reading on the template use, as it is noted to not significantly absorb visible light.

Steiner et al do not requiring that discontinuities be prevented, however they teach control of the topography of the film by varying the strength of the electric field at the interface, as well as use for many applications, hence as relevant use of electric fields, it would have been obvious to one of ordinary skill in the art to chose voltage & electrode topography according to desired enduse, where resulting continuous films would have been within the scope of these teachings, especially considering the remaining coating material between produced pillars show in the figures.

Mancini et al teach making & using a template that may be completely transparent to radiation used to cure photosensitive material, such as by using a quartz or Pyrex substrate & ITO patterned layer, which would inherently be conductive due to composition employed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP 10/3/05



MARIANNE PADGETT
PRIMARY EXAMINER